Complete Summary

GUIDELINE TITLE

Evaluation and treatment of constipation in infants and children: recommendations of the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition.

BIBLIOGRAPHIC SOURCE(S)

Constipation Guideline Committee of the North American Society for Pediatric Gastroenterology. Evaluation and treatment of constipation in infants and children: recommendations of the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition. J Pediatr Gastroenterol Nutr 2006 Sep;43(3):e1-13. [96 references] PubMed

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Baker SS, Liptak GS, Colletti RB, Croffie JM, Di Lorenzo C, Ector W, Nurko S. Constipation in infants and children: evaluation and treatment. A medical position statement of the North American Society for Pediatric Gastroenterology and Nutrition. J Pediatr Gastroenterol Nutr 1999 Nov;29(5):612-26.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Constipation in infants and children without a previously established medical condition

- Functional constipation (functional fecal retention)
- Organic constipation (organic etiology)
- Hirschsprung disease

GUIDELINE CATEGORY

Diagnosis
Evaluation
Management
Treatment

CLINICAL SPECIALTY

Family Practice
Gastroenterology
Pediatrics

INTENDED USERS

Advanced Practice Nurses
Health Care Providers
Nurses
Pharmacists
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

To assist providers of medical care in the management of infants and children with constipation in both inpatient and outpatient settings

TARGET POPULATION

- Infants less than one year of age with constipation without a previously established medical condition
- Older infants and children with constipation without a previously established medical condition

These guidelines are not intended for use in the following patients:

- Neonates less than 72 hours old
- Premature infants less than 37 weeks' gestation

INTERVENTIONS AND PRACTICES CONSIDERED

1. Medical history
2. Physical examination
3. Management of children with functional constipation
    - Education of child and family
    - Disimpaction-oral, rectal, or digital (Digital disimpaction was considered but not recommended.)

- Maintenance therapy using dietary interventions, behavioral modification, and laxatives
- Behavior modification and regular toileting
- Medication (mineral oil, magnesium hydroxide, lactulose, sorbitol, polyethylene glycol [PEG], or other osmotic laxatives; stimulant laxatives such as senna, bisacodyl, or glycerin)

4. Consultation with a specialist
    - Abdominal radiograph and transit time
    - Diagnosis and treatment of Hirschsprung disease
    - Other medications and testing

MAJOR OUTCOMES CONSIDERED

- Sensitivity and specificity of diagnostic tests
- Rate of symptomatic relief
- Prevention and control of symptoms
- Medication and treatment side effects
- Quality of life
- Bowel movement frequency

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

To develop the initial evidence-based guideline, articles on constipation published in English were found using Medline. A search for articles published from January 1966 through November 1997 revealed 3839 articles on constipation. The Cochrane Center has designed a search strategy for Medline to identify randomized controlled trials. This strategy includes controlled vocabulary and free-text terms such as *randomized controlled trial, clinical trial*, and *placebo*. When this search strategy was run with the term *constipation*, 1047 articles were identified, 809 of which were in English and 254 of which included children.

After letters, editorials, and review articles were eliminated, 139 articles remained. Forty-four of these were studies in special populations, such as children with meningomyelocele or Hirschsprung disease, and were eliminated. Ninety-five articles remained and were reviewed in depth. A second search strategy was used to identify articles on constipation that related to treatment, including drug therapy (75 articles), surgery (64 articles), and "therapy" (144 articles). This added 148 new articles, in which the abstracts were reviewed. If the abstract indicated that the article might be relevant, the article was reviewed in depth. Seven additional articles were identified from the reference listings of the articles already cataloged. In total, 160 articles were reviewed for these guidelines.

To evaluate evidence published since 1997, literature searches using the key word "constipation," limited to English language, and "All Child" (which includes children

and adolescents 0 to 18 years of age) were performed in PubMed on May 5, 2003, August 8, 2003, and August 9, 2004. The Database of Abstracts of Reviews of Effects (DARE) and the Cochrane Database of Systematic Reviews also were searched using the key word "constipation." From this search 90 total articles were identified by this process; 27 applied to children who did not have an underlying chronic condition. The authors identified an additional 8 articles during the subsequent discussions.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Categories of the Quality of Evidence

I Evidence obtained from at least one properly designed randomized controlled study.

II-1 Evidence obtained from well-designed cohort or case-controlled trials without randomization.

II-2 Evidence obtained from well-designed cohort or case-controlled analytic studies, preferably from more than one center or research group.

II-3 Evidence obtained from multiple time series with or without the intervention. Dramatic results in uncontrolled experiments (such as the results of the introduction of penicillin treatment in the 1940s) could also be regarded as this type of evidence.

III Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees.

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Articles were evaluated using written criteria developed by Sackett and colleagues. These criteria had been used in previous reviews. Five articles were chosen at random and reviewed by a colleague in the Department of Pediatrics at the University of Rochester (New York, U.S.A.) who had been trained in epidemiology. Concordance using the criteria was 92%. Using the methods of the Canadian Preventive Services Task Force, the quality of evidence of each of the recommendations made by the Constipation Guideline Committee was

determined. The Committee based its recommendations on integration of the literature review combined with expert opinion when evidence was insufficient.

The quality of evidence identified since 1997 was categorized according to Fisher and colleagues.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus (Nominal Group Technique)

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The Committee based its recommendations on integration of the literature review with expert opinion when evidence was sufficient. Consensus was achieved through Nominal Group Technique, a structured, quantitative method. The papers identified since 1997 were reviewed in detail and discussed by the Constipation Guideline Committee until consensus was achieved on whether the original recommendations should be modified based on the new evidence.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The guidelines were critically reviewed by numerous primary care physicians in community and academic practices, including members of several committees of the American Academy of Pediatrics. In addition, the guidelines were distributed to the North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition (NASPGHAN) membership for review and comment and finally were officially endorsed by the society's Executive Council.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Note from the National Guideline Clearinghouse (NGC): The following key points summarize the content of the guideline recommendations. Refer to the full text

for additional information, including detailed information on dosing, possible side effects, and other interventions.

Each recommendation is identified as falling into one of five categories of evidence, indicated by a bracketed Roman numeral. The five categories represent varying levels of clinical confidence regarding the recommendation.

Definitions for the categories of evidence (I, II-1, II-2, II-3, III) are provided at the end of the "Major Recommendations" field.

General Recommendations

A thorough history and physical examination are an important part of the complete evaluation of the infant or child with constipation [III].

Performing a thorough history and physical examination is sufficient to diagnose functional constipation in most cases [III].

A stool test for occult blood is recommended in all constipated infants and in those children who also have abdominal pain, failure to thrive, diarrhea or a family history of colonic cancer or polyps [III].

In selected patients, an abdominal radiograph, when interpreted correctly, can be useful to diagnose fecal impaction [II-2].

Rectal biopsy with histopathologic examination and rectal manometry are the only tests that can reliably exclude Hirschsprung disease [II-1].

In selected patients, measurement of transit time using radiopaque markers can determine whether constipation is present [II-2].

Recommendations for Infants

In infants, rectal disimpaction can be carried out with glycerin suppositories. Enemas are to be avoided [II-3].

In infants, juices that contain sorbitol, such as prune, pear, and apple juice, can decrease constipation [II-3].

Barley malt extract, corn syrup, lactulose, or sorbitol (osmotic laxatives) can be used as stool softeners [III].

Mineral oil and stimulant laxatives are not recommended for infants [III].

Recommendations for Children

In children, disimpaction can be achieved with either oral or rectal medication, including enemas [II-3].

In children, a balanced diet, containing whole grains, fruits, and vegetables, is recommended as part of the treatment for constipation [III].

The use of medications in combination with behavioral management can decrease the time to remission in children with functional constipation [I].

Mineral oil (a lubricant) and magnesium hydroxide, lactulose, and sorbitol (osmotic laxatives) are safe and effective medications [I].

Rescue therapy with short-term administration of stimulant laxatives can be useful in selected patients [II-3].

Senna and bisacodyl (stimulant laxatives) can be useful in selected patients who are more difficult to treat [II-1].

Polyethylene glycol electrolyte solution, given in low dosage, may be an effective long-term treatment for constipation that is difficult to manage [III].

Biofeedback therapy can be effective short-term treatment of intractable constipation [II-2].

Definitions:

Categories of the Quality of Evidence

I Evidence obtained from at least one properly designed randomized controlled study.

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II-2 Evidence obtained from well-designed cohort or case-controlled analytic studies, preferably from more than one center or research group.

II-3 Evidence obtained from multiple time series with or without the intervention. Dramatic results in uncontrolled experiments (such as the results of the introduction of penicillin treatment in the 1940s) could also be regarded as this type of evidence.

III Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees.

CLINICAL ALGORITHM(S)

The original guideline document contains algorithms for:

- The management of constipation in children one year of age and older
- The management of constipation in infants less than one year of age

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations" field).

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Overall Benefit

Appropriate diagnosis and treatment of constipation in infants and children

POTENTIAL HARMS

Risks associated with treatment of constipation in infants and children include:

- Side effects of laxatives such as abdominal pain, bloating, cramping, nausea, diarrhea, flatulence, rash, hypernatremia, hypermagnesemia, hypophosphatemia, and hypocalcemia
- Mechanical trauma to the rectal wall, abdominal distension, vomiting, severe and/or lethal hyperphosphatemia and hypocalcemia with tetany due to phosphate enemas
- Vomiting, anal irritation, nausea, bloating, abdominal cramps, aspiration, pneumonia, pulmonary edema, or Mallory-Weiss tear due to polyethylene glycol-electrolyte lavage
- Risk of lipoid pneumonia with aspiration of mineral oil lubricant
- Idiosyncratic hepatitis, melanosis coli, hypertrophic osteoarthropathy, or analgesic nephropathy due to the stimulant laxative senna.
- Hypokalemia, abnormal rectal mucosa, proctitis (rarely) or urolithiasis due to the stimulant laxative bisacodyl

A discussion of potential adverse effects and cautions related to treatment of constipation can be found in Table 7 of the original guideline document.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

The guidance in this report does not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Clinical Algorithm

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Living with Illness

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1999 Nov (revised 2006 Sep)

GUIDELINE DEVELOPER(S)

North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition - Professional Association

SOURCE(S) OF FUNDING

North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition

GUIDELINE COMMITTEE

NASPGHAN Constipation Guideline Committee

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Committee Members: Susan S. Baker, MD (Chair) Buffalo, NY; Gregory S. Liptak, MD, Syracuse, NY; Richard B. Colletti, MD, Burlington, VT; Joseph M. Croffie, MD, Indianapolis, IN; Carlo DiLorenzo, MD, Columbus, OH; Walton Ector, MD, Charleston, SC; Samuel Nurko, MD, Boston, MA

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

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GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition (NASPGHAN) Web site.

Print copies: Available from the Executive Director, NASPGHAN, P.O. Box 6, Flourtown, PA 19031; E-mail: naspghan@naspghan.org.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on June 9, 2003. The information was verified by the guideline developer on June 16, 2003. This NGC summary was updated by ECRI on November 14, 2006.

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